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NAS-IC-25139402
October 3, 1990

U.S. Department
of Transportation

**Federal Aviation
Administration**

U.S. Department of Transportation

Federal Aviation Administration

Interface Control Document

DATA LINK PROCESSOR (DLP)/

NATIONAL AIRSPACE DATA INTERCHANGE

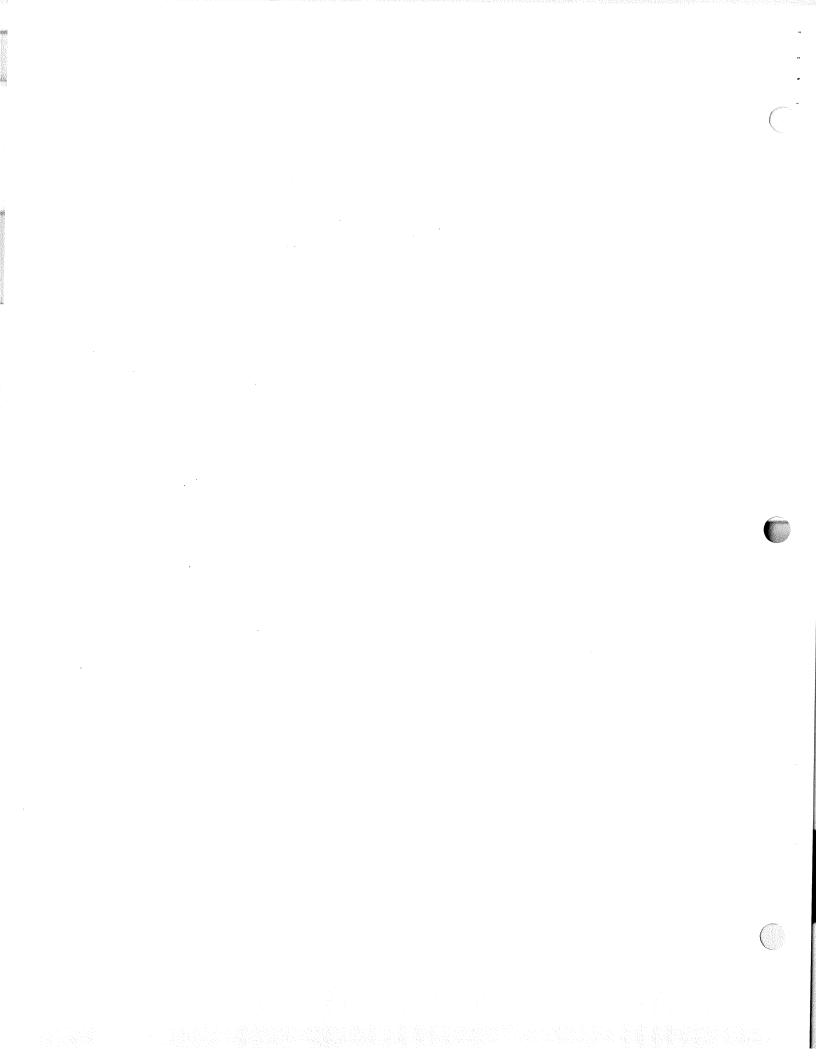NETWORK (NADIN) PACKET SWITCHED NETWORK (PSN)

(DLP/NADIN PSN)

INTERFACE CONTROL DOCUMENTS

APPROVAL SIGNATURE PAGE

DATA LINK PROCESSOR
NATIONAL AIRSPACE DATA INTERCHANGE NETWORK
PACKET SWITCHED NETWORK

(DLP/NADIN PSN)

APPROVAL SIGNATURES		
PARTICIPANT	NAME	DATE
ARD-310 (DLP)		
ANC-140 (NADIN)		
Arcon Corp. (DLP)		
Harris Corp. (NADIN)		
ASE-1		

ORIGINAL SIGNED

REVISION RECORD			
REVISION LETTER	DESCRIPTION	DATE	ENTERED BY

EFFECTIVITY

LOCATION	INTERFACE EFFECTIVITY DATE

Alphabetical Listing by facility

1. Academy (FAA), Oklahoma City, OK
2. Albuquerque ACF, Albuquerque, NM
3. Anchorage ACF, Anchorage, AK
4. Atlanta ACF, Hampton, GA
5. Boston ACF, Nashua, NH
6. Chicago ACF, Aurora, IL
7. Cleveland ACF, Oberlin, OH
8. Denver ACF, Longmont, CO
9. FAA Technical Center, Atlantic City, NJ
10. Fort Worth ACF, Euless, TX
11. Honolulu ACF, Honolulu, HI
12. Houston ACF, Houston, TX
13. Indianapolis ACF, Indianapolis, IN
14. Jacksonville ACF, Hilliard, FL
15. Kansas City ACF, Olathe, KS
16. Los Angeles ACF, Palmdale, CA
17. Memphis ACF, Memphis, TN
18. Miami ACF, Miami, FL
19. Minneapolis ACF, Farmington, MN
20. New York ACF, Ronkonkoma, NY
21. Oakland ACF, Fremont, CA
22. Salt Lake City ACF, Salt Lake City, UT
23. Seattle ACF, Auburn, WA
24. Washington ACF, Leesburg, VA

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1. SCOPE

1.1 Scope. The purpose of this Interface Control Document is to define the the communication protocol to be implemented for the logical and physical interfaces between the Data Link Processor (DLP) and the National Data Interchange Network (NADIN) Packet Switched Network (PSN). This document addresses the lower three communication layers, network layer, data link layer, and physical layer, of the International Standard Organization's (ISO) Open System Interconnection (OSI) Basic Reference Model. The upper four layers, which are responsible for end-to-end communication between the end systems using the NADIN PSN, are addressed separately in the individual end-user-to-end-user Interface Requirement Documents (IRDs) and Interface Control Documents (ICDs).

This document will be referenced by all DLP end-user-to-end-user ICDs that utilize the NADIN PSN.

1.2 Subsystem/Equipment item responsibility list.

ITEM	NAME	RESPONSIBILITY
DLP	Data Link Processor	ARD-310
NADIN PSN	NADIN Packet Switched Network	ANC-140

2. APPLICABLE DOCUMENTS

The following documents of the issue in effect on the date of this Interface Control Document form a part of this document to the extent specified herein. In the event of conflict between the documents referenced herein and the contents of this document, this document shall supersede.

2.1 Government documents.

2.1.1 Federal Aviation Administration.

2.1.1.1 Standards.

FAA-STD-025a	Preparation of Interface Control Documents. October 1987
FAA-STD-020a	Transient Protection, Grounding, Bonding, and Shielding Requirements for Equipment. September 1985
FAA-G-2100e	Electronic Equipment, General Requirements. March 1987

2.1.1.2 Interface requirement documents.

NAS-IR-43020001	National Airspace Data Interchange Network X.25 Packet Mode Users Interface Requirements Document. Feb. 7, 1989

2.1.2 Other federal.

FED-STD-1032	High Speed 25-position Interface for Data Terminal Equipment and Data EIA-530 Circuit-Terminating Equipment. August 1989
Title 47, Sub-part J, Part 15	FCC Rules for Computing Devices - Radiated and Conducted Limit. October 1988

2.2 Non-Government documents.

2.2.1 International Standards Organization.

ISO 7498	Information Processing - Open Systems Interconnection - Basic Reference Model. October 1984

2.2.2 International Telegraph and Telephone Consultive Committee.

Recommendation X.25	Interface between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Terminals Operating in the Packet Mode and Connected to Public Data Networks by Dedicated Circuits. January 1984
Recommendation X.121	International Numbering Plan for Public Data Networks. 1984

2.2.3 Electronic Industries Association.

EIA-530	High Speed 25-Position Interface for Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE). April 1986

3. INTERFACE CHARACTERISTICS

The DLP manages communications between FAA ground systems and data link equipped aircraft. It also collects weather information from the WMSCR and ADAS systems and maintains a data base of the weather products. This weather information can be accessed by pilots using Mode S data link.

NADIN PSN is a packet switching data network that supports the interconnection of various computer systems within the National Airspace System (NAS). The NADIN PSN interface will conform to CCITT Recommendation X.25 (1984). Access to the NADIN PSN is obtained through attachment to a NADIN Packet Switch.

The DLP will access the NADIN PSN based on the access protocol specified in this document. The overall requirements for this interface are described in the NADIN X.25 Packet Mode User's Interface Requirements Document (NAS-IR-43020001, see. 2.1.1.2).

3.1 General design characteristics. The DLP system shall communicate with other NAS systems through connections to a collocated NADIN PSN. Each DLP will have two physical links connected to the NADIN PSN, each physical link with its own unique NSAP address and mapped onto a fixed NADIN PSN subnetwork point of attachment address. The network layer, data link layer, and physical layer communication protocols, as described in the following paragraphs, apply to each physical link which connects DLP to the NADIN PSN.

The requirements of FAA-G-2100e (see 2.1.1.1) shall not be applied to commercial, off-the-shelf equipment except when specified.

3.2 Functional chracteristics. The functional characteristics for the interface between the DLP and the NADIN PSN has been organized according to the ISO Open System Interconnection (OSI) Basic Reference Model (ISO 7498). The interface between the DLP and the NADIN PSN shall conform to the requirements, and follow the procedures, specified in the following paragraphs for each communication layer.

3.2.1 Application layer. Not applicable.

3.2.2 Presentation layer. Not applicable.

3.2.3 Session layer. Not applicable.

3.2.4 Transport layer. Not applicable.

3.2.5 Network layer. The DLP-NADIN PSN network layer shall conform to the X.25 packet level DTE/DCE interface described in CCITT Recommendation X.25 (see 2.2.2).

3.2.5.1 Protocol usage. The network layer protocol shall be in accordance with CCITT Recommendation X.25 (see 2.2.2). The DLP shall act as DTE and the NADIN PSN shall act as DCE for this interface.

3.2.5.2 Addressing. The addresses used by the network service request and indication primitives shall be a 10-digit subset of the CCITT X.121 DTE addresses. (see 2.2.2).

3.2.5.3 <u>Virtual circuit services</u>. The DLP-NADIN PSN interface shall use the virtual call services of the NADIN PSN.

3.2.5.4 <u>Packet format</u>. The packet formats used by the DLP-NADIN PSN interface are described in CCITT Recommendation X.25 (see 2.2.2) and NAS-IR-43020001 (see 2.1.1.2). The packet types used by the DLP-NADIN PSN interface shall be those listed in Table 3-I. Each packet type shall be identified in octet 3 as defined in Table 17/X.25 (page 87) of the CCITT Recommendation.

<u>Table 3-I Packet Types</u>

From DCE to DTE	From DTE to DCE
Call Set-Up and Clearing	
Incoming Call	Call Request
Call Connected	Call Accepted
Clear Indication	Clear Request
DCE Clear Confirmation	DTE Clear Confirmation
Data	
DCE Data	DTE Data
Interrupt Data	Interrupt Data
Interrupt Confirmation	Interrupt Confirmation
Flow Control and Reset	
DCE RR	DTE RR
DCE RNR	DTE RNR
Reset Indication	Reset Request
DCE Reset Confirmation	DTE Reset Confirmation
Restart	
Restart Indication	Restart Request
DCE Restart Confirmation	DTE Restart Confirmation
Diagnostic	
Diagnostic	

3.2.5.5 <u>Optional user facilities</u>. The following X.25 packet level optional user facilities (per section 6 of CCITT Recommendation X.25 and NAS-IR-43020001) shall be implemented:

1) Flow Control Parameter Negotiation
2) Non-standard packet size
3) Non-standard window size
4) Throughput class negotiation
5) Fast Select and Fast Select Acceptance
6) DTE facilities to support OSI Network Service (all options in Annex G of CCITT Recommendation X.25).

3.2.5.6 <u>Packet level parameters</u>. The DLP-NADIN PSN interface will support the parameters described below:

1) <u>Window size</u>. The flow control window size shall be variable from 1 to 8 in steps of 1. The initial window size will be set to 4.

2) <u>Maximum Packet size</u>. The maximum packet size shall be capable of being set to 32, 64, 128, 256, or 512 octets per packet. The initial packet size will be 256 octets.

3) <u>Timers</u>. The X.25 timers for DCE time-outs and DTE time limits shall be implemented according to Annex D of Recommendation X.25.

4) <u>Data Packet Procedures</u>. The interface shall support the M-bit procedure for data packets. The procedures for the D-bit and Q-bit shall not be used.

3.2.6 <u>Data link layer</u>. The data link layer protocol for the DLP-NADIN PSN interface shall be implemented according to CCITT Recommendation X.25 (see 2.2.2) LAPB specifications for single-link communications.

3.2.6.1 <u>Link control functions</u>. The DLP-NADIN PSN interface shall support LAPB procedures as specified in sections 2.3 and 2.4 of CCITT Recommendations X.25 (see 2.2.2).

3.2.6.2 <u>Frame structure</u>. The frame formats shall be as described in section 2.2 of CCITT Recommendation X.25 (see 2.2.2).

3.2.6.3 <u>Link parameters</u>. The initial DLP (DTE) settings for the link parameters described in section 2.4 of CCITT Recommendation X.25 (see 2.2.2) shall be as specified in Table 3-II. The upper and lower limits of these parameters are described in the NADIN X.25 Packet Mode Users IRD (see 2.1.1.2).

<u>Table 3-II Link Level Parameters</u>

Parameter	Initial Value
T1	3 seconds
T2	2.1 seconds
N1	2104 bits
N2	5 tries
T3	25 seconds
K(8)	7 frames

3.2.6.4 <u>Address field encoding</u>. The address field shall be encoded as specified in CCITT Recommendation X.25 (see 2.2.2).

3.2.7 <u>Physical layer</u>. The DLP-NADIN PSN physical layer interface shall conform to EIA-530 standard (see 2.2.3) for Data Terminal Equipment and Data Circuit-terminating Equipment.

3.2.7.1 <u>Configuration</u>. DLP-NADIN PSN interconnection shall be a direct DTE to DCE interface with DLP designated as a DTE and NADIN PSN as a DCE.

3.2.7.2 <u>Signaling rate</u>. This interface shall be capable of operating at a signal rate up to 64 kbps.

3.2.7.3 <u>Signal characteristics</u>. The electrical signal characteristics of each DLP-NADIN PSN physical interface shall be conform to section 2 of the EIA-530 standard (see 2.2.3). The interchange circuits for DLP-NADIN PSN physical interface shall be configured as required for Send-Receive (SR) type as specified in the EIA-530 standard.

3.2.7.4 <u>Local loopback and remote loopback</u>. The local loopback and remote loopback features of EIA-530 shall not be utilized for the DLP-NADIN PSN physical layer interface.

3.2.8 <u>Performance characteristics</u>. Throughput shall be measured: (1) the amount of data within data packets which can be transferred, in kbps, and (2) in the number of packets that can be exchanged per second. The NADIN PS/DLP interface shall support, on each physical link, a continuous throughput of 22 kbps (nominal value for a packet size of 256 octets) and a continuous packet rate of 10 packets per second when a link operating at a signal rate of 64 kbps is used.

3.3 <u>Physical characteristics</u>.

3.3.1 <u>Mechanical characteristics</u>. A removable interfacing cable for each physical interconnection shall be provided by the DLP contractor. The cable will have a maximum length of 200 feet.

    1) <u>DLP</u>.- DLP shall provide a DTE type connector (male contacts, female shell) for the interfacing cable as specified in section 3.3 of the EIA-530 standard (see 2.2.3).

    2) <u>NADIN PSN</u>.- NADIN PSN shall provide a DCE type connector (female contacts, male shell) for the interfacing cable as specified in section 3.3 of the EIA-530 standard (see 2.2.3).

3.3.1.1 <u>Installation</u>.

3.3.1.1.1 <u>Interchangeability</u>. Each DLP shall be functionally and physically interchangeable and capable of interfacing with NADIN PSN subsystems which comply with this document. The connecting cable will be interchangeable, except for the differences in length.

3.3.1.1.2 <u>Surface finish</u>. Not applicable.

3.3.1.1.3 <u>Location and orientation</u>. The location of the DLP-NADIN interface shall be oriented to enable unobstructed access for servicing.

3.3.1.1.4 <u>Holes</u>. Not applicable.

3.3.1.1.5 <u>Fasteners</u>. Fastener hardware shall be as specified in FAA-G-2100e. All male and female connectors will be provided with captive jack screw fasteners for mating.

3.3.1.1.6 <u>Bonding</u>. Bonding shall be as specified in FAA-STD-020.

3.3.1.1.7 <u>Weight and center of gravity</u>. Not applicable.

3.3.1.1.8 <u>Materials</u>. Materials shall be as specified in FAA-G-2100e.

3.3.1.1.9 <u>Markings</u>. Markings shall be as specified in FAA-G-2100e.

3.3.1.2 <u>Connectors</u>. Electrical connectors shall be in accordance with FED-STD-1032 and EIA-530 (see 2.1.2).

3.3.1.3 <u>Fluids (gases and liquids)</u>. Not applicable.

3.3.1.4 <u>Transportation and handling</u>. Not applicable.

3.3.2 <u>Electrical/Electronic characteristics</u>. Pin configuration and electrical requirements for all signalling equipment shall be in accordance with EIA-530.

3.3.2.1 <u>Electrical/Electronics block diagrams</u>. Electrical/electronic block diagrams are not used to impose requirements in this document.

3.3.2.2 <u>System description</u>. Not applicable.

3.3.2.3 <u>Schematics</u>. Not applicable.

3.3.2.4 <u>Interface wiring diagrams</u>. Provided by DLP contractor.

3.3.2.5 <u>Power capacity</u>. Not applicable.

3.3.3 <u>Environmental characteristics</u>.

3.3.3.1 <u>Thermal characteristics</u>. The interface shall perform in accordance with the requirements specified herein throughout a temperature range of 10 to 40 degrees Celsius.

3.3.3.1.1 <u>Passive heat transfer</u>. Not applicable.

3.3.3.1.2 <u>Cooling</u>. Not applicable.

3.3.3.2 <u>Electromagnetic</u>. Shielding and grounding for reducing electromagnetic interference shall comply with the requirements in FCC Part 15, Subpart J, Class B.

3.3.3.3 <u>Dynamic</u>. Not applicable.

3.3.4 <u>Envelope characteristics</u>. Not applicable.

4. QUALITY ASSURANCE PROVISIONS.

4.1 <u>General</u>. This section identifies the verification requirements for section 3 of this document. Verification requirements shall be in accordance with Table 4-I, Verification Requirements Traceability Matrix (VRTM).

4.2 <u>Responsibility for verification</u>. The FAA shall be responsible for the verification of the DLP-NADIN PSN interface.

4.3 <u>Special test support requirements</u>. None.

4.4 <u>Verification methods and rationale</u>. Methods of verification selected for use in this document are: Analysis (A), Test (T), Inspection (I), and Demonstration (D).

4.4.1 <u>Inspection (I)</u>.

4.4.1.1 <u>Hardware</u>. Inspection of hardware is defined as a method for verifying physical requirements that determine compliance without the use of special laboratory equipment, procedures, items, or services. Inspection is used to verify construction features, document and drawing compliance, workmanship, and physical condition. The success criterion for inspection shall be pass/fail.

4.4.1.2 <u>Software</u>. Software examination is an element of inspection consisting of investigation, without the use of special laboratory appliances or procedures, to determine compliance with requirements. This non destructive examination includes review of software source and object listings to verify compliance with software documentation, requirements, and coding standards as well as verification of the implementation of required mathematical equations. The success criterion shall be pass/fail.

4.4.1.3 <u>Technical data and documentation (TD&D)</u>. Verification by inspection will be the primary method of verifying TD&D. This inspection will consist of comparing the TD&D with the appropriate compliance and reference documents. The rating scale for this technique will be pass, pass with qualification, or fail.

4.4.2 <u>Test (T)</u>.

4.4.2.1 <u>Hardware</u>. Hardware test is defined as a method of verification in which performance is measured during or after the controlled application of functional and/or environmental stimuli. Measurements require the use of laboratory equipment, procedures, items, and/or services. The success criterion shall be pass/fail.

4.4.2.2 <u>Software</u>. Software test is an activity that employs technical means, including evaluation of functional operation by use of special equipment or instrumentation, simulation techniques, and the application of established principles and procedures, to determine compliance with requirements. Test performance is the means of creating data for detailed analysis. The analysis of data derived from test is an integral part of the activity. The success criterion shall be pass/fail.

4.4.2.3 <u>Technical data and documentation (TD&D)</u>. Verification by testing of TD&D will consist of contractor and/or operational personnel using the TD&D to perform the tasks for which the TD&D was generated and gathering data from these tasks. These tests shall be used to verify the TD&D. The rating scale for this technique will be pass, pass with qualification, or fail.

4.4.3 <u>Demonstration (D)</u>.

4.4.3.1 <u>Hardware</u>. Hardware demonstration is defined as a method of verification denoting the qualitative determination of properties of an end-item or component by observation. Demonstration is used without special test equipment or instruction to verify such features, service, access features, and transportability. The rating scale for this technique shall be "pass/fail."

4.4.3.2 <u>Software</u>. Software demonstration is an activity limited to a readily observable functional operation to determine compliance with requirements (i.e., the proper response at a site as a result of a specified interrogation or command to be processed by the program). Demonstration is primarily used for activities where data gathering is not appropriate for verification. The rating scale for this technique shall be "pass/fail."

4.4.3.3 <u>Technical data and documentation (TD&D)</u>. Verification by demonstration of TD&D will consist of contractor and/or operational personnel being observed using the TD&D to perform the tasks for which the TD&D was generated. The rating scale for this technique will be pass, pass with qualification, or fail.

4.4.4 <u>Analysis (A)</u>.

4.4.4.1 <u>Hardware</u>. There are three methods of hardware analysis:

1) Engineering analysis

This type of analysis is usually an engineering design function and involves study, calculation, or modelling of the known or potential failure modes and reaction or interactions of the specified parts, configuration with the known function, performance, and/or probable effects of the operational environments. This analysis is normally used to verify margin when it is not desirable to test to failure.

2) Similarity (S) analysis

Similarity analysis is a method applied to end-items or components that are identical in design and manufacturing processes to end-items or components that have been previously qualified to equivalent or more stringent requirements.

3) Validation (V) of records analysis

Validation of records analysis is a method of verification in which manufacturing records are used to verify compliance of concealed construction features or processes of manufacturing (i.e., vendor items).

4.4.4.2 <u>Software</u>. Software analysis is an activity taking the form of the processing of accumulated results and conclusions, intended to provide proof that the verification of requirement(s) has been accomplished. The analytical results may be composed of interpretation of existing information or derived from lower level tests, demonstrations, analysis, or examinations.

4.5 <u>Verification phases</u>. At a minimum, one of the three levels of verification shall be performed to demonstrate that all interface requirements have been met. The three levels of verification are Subsystem, Integration, and Site. Definitions of the three verification levels are given below.

4.5.1 <u>Subsystem acceptance testing</u>. This level of verification is comparable to DT&E level testing and shall be conducted at the DLP development site. It culminates in the acceptance testing of a configuration end item. NAS subsystem requirements will be verified to the maximum extent practical at this level to avoid the more costly correction of design flaws discovered later during NAS System Integration Testing.

4.5.2 <u>System, integration testing</u>. This level of verification shall be accomplished at the FAATC during Operational Test and Evaluation (OT&E) to determine whether the hardware/software to be deployed for site installation will perform in a NAS environment in accordance with system level operational and performance requirements. This level of testing does not include the integration testing conducted at a subsystem level.

4.5.3 <u>Site acceptance testing</u>. This level of verification shall be done at the site. The test portion of the installation and test level emphasizes the demonstration of overall system performance requirements. Demonstration and inspection are the methods most often employed during this level, which includes end item, site final acceptance testing.

4.6 <u>Quality conformance inspections</u>. The VRTM presented in Table 4-I lists the requirements to be verified, the phase or level at which verification will occur, and the methods of verification that will be used. Compliance of vendor supplied hardware and software interfaces specified by this document shall be subject to verification by inspection and demonstration.

4.7 <u>Verification characteristics</u>. Not applicable.

Table 4-1 Verification Requirements Traceability Matrix (VRTM)

Section 3. Requirements Paragraph Reference for Document	Verification Phase & Method			
	Subsystem Level	Integration Level	Site Level	Remarks
3.1 General Design Characteristics	T	T	X	
3.2 Functional Characteristics	X	X	X	Gen. descript.
3.2.5 Network Layer	X	X	X	Gen. descript.
3.2.5.1 Protocol Usage	T	T	D	
3.2.5.2 Addressing	T	T	D	
3.2.5.3 Virtual Circuit Services	T	T	D	
3.2.5.4 Packet Format	T	T	D	
3.2.5.5 Optional User Facilities	T	T	D	
3.2.5.6 a. Window Size	T	T	D	
3.2.5.6 b. Packet sizes	T	T	D	
3.2.5.6 c. Timers	T	T	D	
3.2.6 Data Link Layer	V	T	D	
3.2.6.1 Link Control Functions	T	T	D	
3.2.6.2 Frame Structure	T	T	D	
3.2.6.3 Link Parameters	T	T	D	
3.2.6.4 Address encoding	T	T	D	
3.2.7 Physical Layer	V	T	D	
3.2.7.1 Configuration	I	I	X	
3.2.7.2 Signaling Rate	T	T	X	
3.2.7.3 Signal Characteristics	V	T	X	
3.2.7.4 Local Loopback and remote loopback	X	X	X	
	V	T	X	
3.2.8 Performance Characteristics	X	T	T	
3.3 Physical Characteristics	X	X	X	
3.3.1 Mechanical Characteristics	I	I	I	
3.3.1 a. DLP	I	I	I	
3.3.1 b. NADIN PSN	I	I	I	
3.3.l.1 Installation	I	I	I	
3.3.1.1.1 Interchangeability	D	D	X	
3.3.1.1.2 Surface Finish	I	I	I	
3.3.1.1.3 Location and Orientation	I	I	I	
3.3.1.1.5 Fasteners	I	I	I	
3.3.1.1.6 Bonding	I	I	I	
3.3.1.1.8 Materials	I	I	I	
3.3.1.1.9 Marking	I	I	I	
3.3.1.2 Connectors	I	I	I	
3.3.2 Electrical/Electron. Char.	I	I	I	
3.3.3 Environmental Char.	X	X	X	
3.3.3.1 Thermal	V	T	X	
3.3.3.2 Electromagnetic	V	T	X	

Legend   I = inspection, T = testing, D = demonstration, V = validation, X = not applicable

5. PREPARATION FOR DELIVERY.

Not applicable.

6. NOTES.

6.1 Definitions.

Data Circuit-Term-inating Equipment	The equipment which interfaces the DTE and adapts it to the common carrier facilities, usually a data set or (DCE) modem.
Data Link Layer	The second layer of the OSI architecture. Link layer protocols manage the establishment, maintenance, and release of data link connections. They control the flow of data and supervise error recovery and link flow control.
Data Terminating Equipment (DTE)	The user's data communications equipment.
I-Frames	Information frames
K	Maximum number of outstanding I-Frames.
N1	Maximum number of bits in an information (I) frame (including LAPB header/trailer).
N2	Maximum number of transmissions (original and retransmissions) of a frame requiring an acknowledgement, if no acknowledgement is received.
Network Layer	The third layer of the OSI architecture. Network layer protocols provide services associated with the movement of data through the network. In addition to duplicating the data link functions for the network, they also provide routing and switching.
Physical Layer	The lowest level of the OSI architecture. Services provided to the link layer include services to connect, maintain, and disconnect the physical circuits of the communication interface.
T1	Time between the transmission of a frame requiring an acknowledgement and retransmission of the frame in the absence of an acknowledgement.
T2	Maximum delay between the receipt of a frame requiring an acknowledgement and transmission of an acknowledging frame.
T3	The maximum time a link shall be allowed to remain idle.

6.2 <u>Abbreviations and Acronyms</u>.

ACF	Area Control Facility
ADAS	AWOS Data Acquisition System
APS	Program Engineering Service (FAA)
ASA	Advanced System Acquisition Service (FAA)
AWOS	Automated Weather Observing System
CCITT	Consultative Committee on International Telegraphy and Telephony
DCE	Data Circuit-terminating Equipment
DLP	Data Link Processor
DTE	Data Terminal Equipment
EIA	Electronic Industries Association
FAA	Federal Aviation Adminstration
FAA-STD	FAA Standard
FAATC	FAA Technical Center
FCC	Federal Communications Commission
FED	Federal
IC	Interface Control
ICD	Interface Control Document
IR	Interface Requirements
IRD	Interface Requirements Document
ISO	International Standards Organization
Kbps	Kilo Bits Per Second
LAPB	Link Access Procedures Balanced
NADIN	National Airspace Data Interchange Network
NAS	National Airspace System
OSI	Open System Interconnection
OT&E	Operational Test and Evaluation
PSN	Packet Switched Network
QOS	Quality of Service
REJ	Reject
RNR	Receiver Not Ready
RR	Receiver Ready
SR	Send-Receive
STD	Standard
VRTM	Verification Requirements Traceability Matrix
WCP	Weather Communications Processor
WMSCR	Weather Message Switching Center Replacement